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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,625	03/17/2004	Scott H. Slaughter	001.04	4799
26344	7590	02/14/2006	EXAMINER	
JENNIFER L. BALES MOUNTAIN VIEW PLAZA 1520 EUCLID CIRCLE LAFAYETTE, CO 80026-1250			GARBER, CHARLES D	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,625

Applicant(s)

SLAUGHTER ET AL.

Examiner

Charles D. Garber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6,9,10 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 3,5,7,8 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

While Applicant maintains amendment to the claims was merely intended to clarify the invention rather than change the scope Examiner considers the amendment could be effective in overcoming Examiner's previous rejection combining the House reference that is concerned with monitoring the speed of a shaft penetrating the ground rather than the preexisting depth of a shaft but for the following reasons.

Firstly, the term "preexist" which means "to exist earlier or before" and applied to the shaft being measured does not appear to have any effect or limitation on the method or process of measuring the shaft depth. Secondly, it can be argued, that even a moving shaft as taught by House may be considered to be preexisting or else there would be no shaft to measure.

In either case, even if Applicant intends to measure a shaft that is existing in the ground and is not moving at the time, Mercado (US Patent 5,996,414) teaches the advantage of measuring the depth of piles in old structures as a necessary precursor to rehabilitation of the structures.

Regarding Applicant's arguments, Applicant argues the House reference does not teach measuring depth but only rate or frequency of driving or "blow rate". Applicant referring to the House reference explains:

"The House et al. invention can also count the number of blows over a

predetermined distance driven, but the remote sensor is counting blows, not measuring distance. "For example, the switch means 88 can be actuated at a selected starting time and then reactivated each time the pile 10 is driven a selected distance, such as one foot." (Col. 6, lines 64-67).

It is not necessary to measure driven depth - the pile driver operators know the driven depth because they are operating the pile driver equipment concurrently. Nor does the invention of House et al. have the capability to measure depths."

Examiner considers it is presumptuous to assume the pile driver operators known the driven depth without measuring. Examiner considers the distance, even if not measured automatically by some sort of sensor (as a depth sensor is not expressly disclosed in the House reference), must be ascertained by some process other than intuition. The pile driver's knowledge assumed by Applicant must inherently be measured by some process even if only visually judged with no yardstick or tape measure. It is clear by Applicant's own analysis of the House reference that House is not just concerned by the rapidity of blows but by the distance rate the driver is progressing into the earth. This was the relevant teaching from House that Examiner relied upon.

As for Applicant's argument with respect to the Baziw reference and the features it does not teach, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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Applicant also suggests that because Baziw is concerned with testing soil conditions it is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Baziw is concerned with measuring sound propagation through the earth in support of the analysis as is the instant invention and Applicant's admitted prior art..

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 4, 6, 9, 10, 12, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (Admission) in view of House et al. (US Patent 4,365,306) and Baziw (US Patent 5,177,709).

Regarding claims 1, 2, 4, 9, 10, 12 and 14, Admission discloses "Parallel Seismic (PS) testing has been employed for such uses as determining the depth of an unknown foundation when the foundation top is not accessible or when the piles are too long and slender to be tested by echo techniques. Typically a borehole is drilled into the soil adjacent to the foundation, and the borehole is cased. In the case where the receiver is a hydrophone, the cased borehole is filled with water. In the case where the receiver is a **geophone**, several geophone receiver components are spaced apart in the borehole. An exposed portion of the foundation is then impacted with a hammer or the like, and compression or flexural waves travel down the foundation and are transmitted into the surrounding soil. The receiver detects the transmitted signals. The depth of the foundation is indicated by a weaker and slower signal arrival below the tip of the foundation." The foundation is considered to be preexisting.

Admission however teaches monitoring a foundation and not specifically a shaft.

House teaches similarly monitoring the depth of pile (shaft) during a pile driving operation with a parallel acoustic monitor in order to "control the quality of operation of the pile driving hammer" and "determine if...striking the pile at the desired rate". House further teaches determining and displaying "the number of times the pile driving hammer 11 strikes the pile 10 to drive it a predetermined distance" to ensure the pile is driven at "the optimum rates over time and distance" for "the type of soil into which the pile is to be driven". The shaft being driven by House may be considered to be a preexisting shaft as it exists before it is driven into the ground.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to acoustically monitor a shaft or pile in order to determine striking the pile at the desired rate and control the quality of operation of the pile driving hammer to optimum rates over time and distance for the type of soil into which the pile is to be driven.

Admission also teaches a hydrophone or geophone in a borehole rather than a transducer in a cone penetrometer taking measurements at plural depths.

Baziw teaches a "seismic cone (12) is a commercially available cone penetrometer which contains, (among other transducers) a **geophone** (not shown) **for detecting seismic waves penetrating through the ground**....When th[e] apparatus is in use, the SCPT cone (12) is advanced to a predetermined depth. The apparatus is now ready to begin acquiring data for the purpose of estimating shear and/or compression wave velocities....A seismic event is generated....a hammer blow....or other device". Baziw also teaches "the penetrometer is advanced another increment and the process is repeated. By comparing the arrival times of the constituent waveforms integrated in different seismic records obtained from the same probe hole, it is possible to estimate the average velocities of said constituent waveforms over the depth increment under study"

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a seismic cone with geophone (transducer) as this is effective for detecting seismic waves penetrating through the ground. Taking

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measurements at plural depths permits estimation of average velocities which is specifically useful "for plotting the soil profile" including any objects within the soil.

As for claims 6 and 13, Examiner takes Official Notice that use of an accelerometer for detecting seismic events is widely known and one having ordinary skill would have known that an accelerometer are readily available, compact and inexpensive alternatives to geophones at the time of the invention.

Claims 1, 2, 4, 6, 9, 10, 12, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (Admission) in view of Mercado (US Patent 5,996,414) and Baziw (US Patent 5,177,709).

Regarding claims 1, 2, 4, 9, 10, 12 and 14, Admission discloses "Parallel Seismic (PS) testing has been employed for such uses as determining the depth of an unknown foundation when the foundation top is not accessible or when the piles are too long and slender to be tested by echo techniques. Typically a borehole is drilled into the soil adjacent to the foundation, and the borehole is cased. In the case where the receiver is a hydrophone, the cased borehole is filled with water. In the case where the receiver is a **geophone**, several geophone receiver components are spaced apart in the borehole. An exposed portion of the foundation is then impacted with a hammer or the like, and compression or flexural waves travel down the foundation and are transmitted into the surrounding soil. The receiver detects the transmitted signals. The depth of the foundation is indicated by a weaker and slower signal arrival below the tip of the foundation."

Admission however teaches monitoring a foundation and not specifically a shaft.

Mercado teaches the advantage of acoustically measuring the depth of piles in old structures as a necessary precursor to rehabilitation of the structures supported by shafts or piles (abstract, column 1 lines 14-32).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to acoustically monitor a shaft or pile in order to determine the shaft depth in old structures requiring rehabilitation.

Admission also teaches a hydrophone or geophone in a borehole rather than a transducer in a cone penetrometer taking measurements at plural depths.

Baziw teaches a "seismic cone (12) is a commercially available cone penetrometer which contains, (among other transducers) a **geophone** (not shown) **for detecting seismic waves penetrating through the ground**....When th[e] apparatus is in use, the SCPT cone (12) is advanced to a predetermined depth. The apparatus is now ready to begin acquiring data for the purpose of estimating shear and/or compression wave velocities....A seismic event is generated....a hammer blow....or other device". Baziw also teaches "the penetrometer is advanced another increment and the process is repeated. By comparing the arrival times of the constituent waveforms integrated in different seismic records obtained from the same probe hole, it is possible to estimate the average velocities of said constituent waveforms over the depth increment under study"

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a seismic cone with geophone (transducer) as this is effective for detecting seismic waves penetrating through the ground. Taking

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measurements at plural depths permits estimation of average velocities which is specifically useful "for plotting the soil profile" including any objects within the soil.

As for claims 6 and 13, Examiner takes Official Notice that use of an accelerometer for detecting seismic events is widely known and one having ordinary skill would have known that an accelerometer are readily available, compact and inexpensive alternatives to geophones at the time of the invention.

Allowable Subject Matter

Claims 3, 5, 7, 8, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Garber whose telephone number is (571) 272-2194. The examiner can normally be reached on 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Charles D. Garber
Primary Examiner
Art Unit 2856

cdg